CPR4 Handheld Radar
User manual

Cinside

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CPR4 User Manual v.1.1
3 April 2012

1. INTRODUCTION

Thank you and congratulations for purchasing Cinside CPR4! In this *user manual* you will find:

- A quick start guide (page 2)
- A guide how to use the software CPRMon (page 8)
- Technical specifications (page 9)
- Warranty information (page 10)

We advise you to read the whole manual carefully in order to use the equipment correctly and to learn about its functions. Look out for these symbols when you are reading:

Pay attention

Tips and information

We also recommend you to store your user manual in the enclosed hard case or in a safe place. Before starting up, we would like to give you some background information about our product.

The power to sense through walls – in your hand

CPR4 is a handheld easy-to-use device for detection of moving objects behind walls or other obstacles. A person hiding may be detected several meters behind a wall. If there are any moving objects, the operator will be alerted immediately. CPR4 can also be fixed mounted or simply put in a bag to observe an area of interest. Up to 7 units can be remotely controlled and monitored.

New features in CPR4:

- AEC – Automatic Environment Compensation
  The device automatically compensates for operator and environment motions
- Motion classification: **place – direction – speed**
  The operator can now receive a rough estimation of the detected motion visualised by graphical symbols

How it works

The CPR4 radar is primarily measuring motion compared to many other radar technologies that are measuring distance and from that may calculate a motion.

The CPR4 radar transmits electromagnetic energy (radio waves) of a certain frequency, which is reflected in all surfaces it hits. The energy also penetrates all kind of materials except a homogenous metal plate. Eventually some of the energy returns back to the radar. The returned frequency is the same as the transmitted for static objects and for moving objects the returned frequency is different. The detection of the difference gives the alert.

The measured level of motion is dependent on the size of the object, size of motion, speed of motion, distance to object and of course the obstacles in between.

Main application

- Military and police break in operations
  By at an early stage receiving information about movements within rooms and buildings, the risks can be reduced during a break in operation. This information is vital when decisions about safety precautions are made.

2. QUICK START GUIDE

Product description

You navigate in the CPR4 using six buttons:

- The *LEFT* (←) and the *RIGHT* (→*)* arrow are used for moving the cursor to the left and right to select a parameter
- The *UP* (↑) and the *DOWN* (↓) arrow are used for increasing or decreasing the value of a chosen parameter
- The *POWER* button is used for turning on and switching off the device
- The *LAMP* button us used for turning on and off the background lighting

Front of CPR4

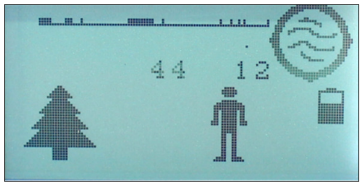
Starting up the device

- Turn on CPR4 by pressing the POWER button and holding it for a few seconds. If you don't hold the button, the CPR4 will switch off automatically. This is to avoid unintentional start-up of the device, for example in a bag, which will drain the batteries.

Turning off the device

- Press the *power* button and hold for two seconds until the display is cleared.

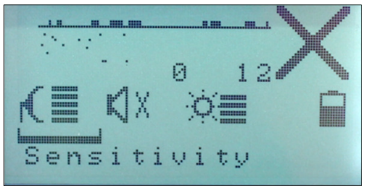
The display



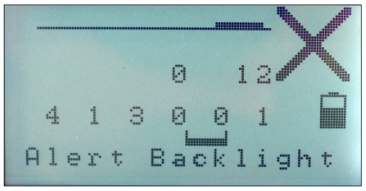
Standard view

- The *upper* part of the display shows results from the collected data. Here you receive information about movements in the room with the *main indicator* to the right, and a thin line to the left represents the last minute history of movements.
- The *lower* part of the display is used for specifying the movement (standard view) using symbols - it is also used for navigating in the **menus**. The menu automatically appears when pressing an arrow button.

There are two menu pages in the CPR4. You navigate to and in-between them using the LEFT and RIGHT arrow. Menu 1, when you navigate to the left, is made for everyday use. Here you can manage settings for *sensitivity level, sound level* and *background lighting.* The Menu 2, when you navigate to the right, is used for *advanced* settings. When you are **inactive** in the menus for 5 seconds, the device will return to standard view.



The left navigation menu for everyday use



The right navigation menu for advanced settings

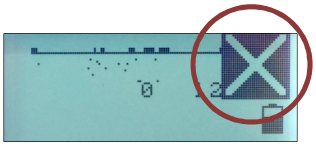
How to use the standard view

When the device is turned on, simply hold it *still* against the wall of a room you want to examine. Observe and analyse what happens on the display.

Indicators

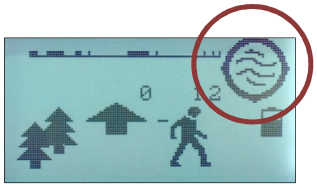
The *main indicator* is placed in the top right corner and contains three symbols:

- A *blinking cross* indicates self-motion of the radar or that the radar is calibrating.



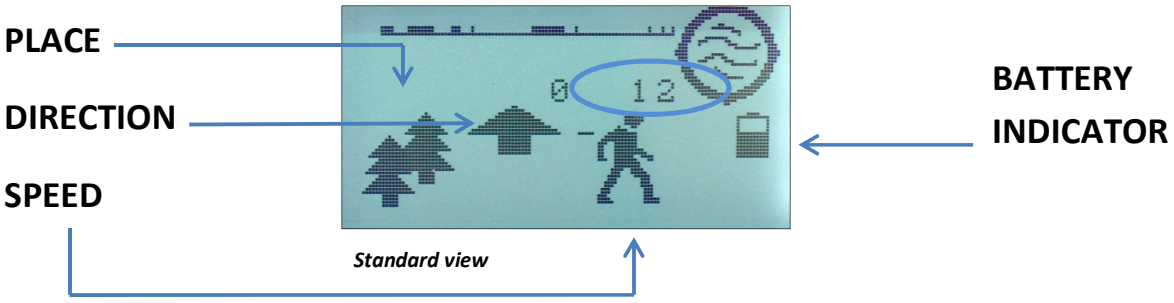
- *OK* – indicates that the radar is active and that no movement has been detected

- The *motion symbol* indicates that movement has been detected



When a movement occurs, the CPR4 may also show more detailed information about the motion itself – if possible. The information given is *place – direction – speed*. This is represented by three sets of symbols:

- *Tree symbols* – indicates whether the movement is detected close to the CPR4 or far away. The scale ranges from 1-4 trees. If ***one*** tree is shown, then the movement is close to the operator (typically less than 2m) and if ***four*** trees are shown, then the movement is far away from the operator (typically more than 5m).
- *Arrows* – an UP arrow indicates that the detected object is **moving *away*** from the operator and a DOWN arrow indicates object is **moving *towards*** the operator.
- *Standing and walking man* – indicates whether the detected object is standing **relatively still** or if it is **moving.**



- The two sets of numbers shown in the picture above (0 and 12 in this case – blue ellipse) are the *measured movement value (0)* and *alert threshold value (12).* The movement value is changing constantly when movement occurs and the threshold value is set up in *menu 1.*
- To the right in the lower part of the display you will find another indicator, the **battery indicator.** If the battery is fully charged, all ten bars will appear inside the battery symbol. Fully charged batteries should last for at least 12 hours when not using the display background light. If used - do so with as low intensity as possible to maximize operation time.

⚠ **The motion detection of CPR4 is highly sensitive.** It is therefore very important that the CPR4 itself is fixed and the environment around the operator is as still as possible. When used as a handheld piece of equipment, it is very important that the operator is holding the CPR4 in a firm grip while lightly pressing it against the wall. It takes some practice. The movement level in the surroundings, including the operator, will decide how high sensitivity can be used. The new function AEC (Automatic Environment Compensation) will take care of the adjustment.

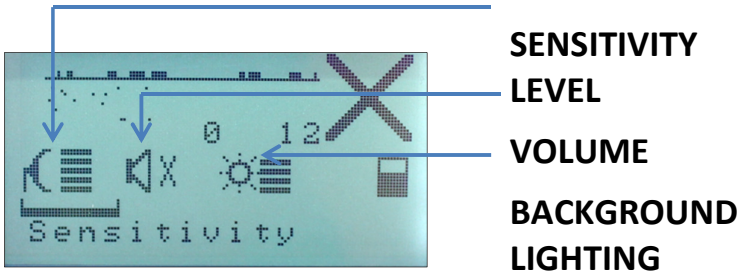
The best way to familiarise yourself with CPR4 is to find a still environment with as little surrounding movements as possible. The goal of CPR4 is to not alert the operator when there is nothing moving. Therefore, the most important factor is for the operator to understand what is required for the CPR4 alert not to go on.

A very good aid in the learning process of the CPR4 is the CPRMon software. With a portable PC or Android device with Bluetooth, and the CPRMon software, it is easy to investigate and understand how CPR4 works. Put the CPR4 on one side of the wall and the operator can move around on the other side and at the same time view the results from CPR4. (see more on page 11)

Menu 1 – Everyday use

The first – and maybe most important setting to understand – is the sensitivity setting. There are five sensitivity levels and each level is connected to an alert threshold value (displayed in the standard view). If the measured movement exceeds the threshold value, the operator will be alerted.

Sensitivity level	Alert threshold value
1	250
2	120
3	60
4	30
5	12



Menu 1 – for everyday use

- To enter Menu 1 – press an arrow to activate the menu and navigate to the desired parameter.
- To change **sensitivity level,** mark “Sensitivity” and use the UP and DOWN arrow to change the value. The same procedure is used for *volume* and *background light* as well.

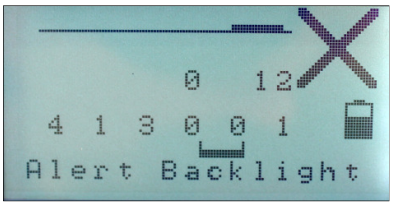
- The **volume** setting has 5 levels and a mute level (indicated by an X next to the speaker)
- The **background lighting** setting ranges from 1-100% in varying steps

A higher level of sensitivity requires a minimal amount of movement on the operator's part. Do not use to high sensitivity setting unless necessary as it aggravates usability.

Full backlighting will result in a high battery usage. Use the LIGHT button to quickly turn the background lighting on and off!

Menu 2 – Advanced settings

The advanced settings menu is accessed by pressing the RIGHT button repeatedly until 6 figures appear. The marked function name appears at the bottom of the display.



- To change a parameter, simply mark the function and then press UP arrow or DOWN arrow to choose the preferred setting

Function (in order)	Interval	Default	Setting
Filter mode	0-15	0	A higher value filters out fast motion
Display mode	0-3	1	Extra information may be presented on the display
Graph mode	0-5	1	0 = graph off 1-5 minutes to scroll graph
Classification	0-2	2	0 = CPR3 style 1 = AEC active 2 = AEC + Classifications active
Alert backlight	0-1	0	0 = normal mode 1 = backlight on when alert
Unit still auto	0-1	1	0 = alert 1 = alert only when the unit is still

Battery change

The battery compartment

- To open the battery compartment, simply unscrew the twist screw located on the backside of the CPR4.
- Four AA batteries are required and both rechargeable NiHM and disposable alkaline batteries can be used.
- Please note the symbols indicating the direction in which to insert the batteries.
- Rechargeable batteries are to be charged in separate external unit (included)

⚠ If the equipment is not be used for a longer period of time, remove the batteries to avoid leakage.

Mounting support

- There is support for a mono-pod (or tri-pod) with ¼" camera screw to ease the fix mounting of CPR4.

Mono-pod connection

CPR4 mounted on a tripod

CPR4 hard case

Your new CPR4 is delivered in a hard case for storage, transport and protection. The case content:

- The CPR4 device
- Extra batteries
- Battery charger
- Connection cables
- User manual

CPR4 hard case

3. USING THE SOFTWARE

See what your CPR4 is seeing – on your PC or Android device

From a regular PC with Windows operating system (XP, Vista or Windows 7) or an Android device - and a Bluetooth adapter, you may remotely supervise and control up to four CPR4 units.

The Bluetooth adapter may be internal (built-in) or an external USB adapter. An external USB adapter for Bluetooth Class 1 gives the longest range, up to 100 meters. Bluetooth Class 2, which is normally built into computers, gives a useful range of 5 to 20 meters depending on the environment. The CPR4 have Bluetooth Class 1 and a built-in antenna.

Installation steps CPRMon for Windows

There are some steps you have to walk through the first time you use the Bluetooth interface on your computer, and when you connect to a CPR4 for the first time.
We have one description for all operating systems so some terms and procedures may be slightly different on your system.

1) Make sure you have Bluetooth hardware installed, may be internal or external adapter.
2) Make sure you have Bluetooth radio enabled.
3) In control panel, find Bluetooth or Devices
4) Select “Add Bluetooth device”
5) Power on the CPR4 and keep it within range
6) The CPR4 should turn up in the search window
7) Select the CPR4
8) If asked for type of pin code select “key from documentation”
9) Enter the pin code “0000” (four zeros)
10) Note the Com-port number. Each connected CPR4 will have a Com-port number.
11) Set the Com-port number in the CPRMon program.

When the connection has been completed, ”BT” can be read next to the battery symbol on the CPR4 display.

To find out the Com-port number afterwards go to the device manager and expand the “COM and LPT”.

If several CPR4’s are running at the same time, it might be helpful to identify them with the serial number which is printed on the label on the front panel of CPR4.

4. TECHNICAL SPECIFICATIONS

Display

Graphical 128x64 pixels, monochrome with transreflective background and adjustable LED backlight. Readable in sunlight and darkness.

Communication

Type:	Bluetooth 2.0 Class 1, Fully Bluetooth pre-qualified
Range:	100 m in open air, typically 10-30 m indoor
Frequency:	2.400 – 2.485 GHz
Max Transmit Power:	+6dBm
Min Transmit Power:	-27dBm
Antenna:	Built in
Server platform:	Windows XP, Vista, 7 or Windows Mobile

Approvals:

Radio	EN 300 328 V1.5.1 (2004 – 08)
	EN 301 489 – 1 V1.4.1 (2002 – 08)
	EN 301 489 – 17 V1.2.1 (2002 – 08)
EMC Emissions	FCC15B Class B
	EN55022 Class B
EMC Immunity	EN55024 Class
Environmental	EN300 019-2-4 v2.2.2 (2003-2004)

Power management/batteries

Type:	Standard pen light size AA, rechargeable or alkaline
Capacity:	2700 mAh (min 2500 mAh recommended)
Number of cells:	4
Operating time:	8-16 hours depending on the use of display backlight
External power:	Yes, USB mini

Environmental

Size:	90/120 mm width, 220 mm height, 40 mm thick
Weight operational:	600 grams
Weight:	1600 grams (incl. accessories and box)
Material:	ABS
Oper. temperature:	-20 - +50 degrees Celsius
Water resistance:	IP67 (approval pending) 0.15 m depth and 30 minutes
Dust resistance:	IP67 (approval pending)
Mechanical chock:	TBD
Air Pressure:	Operational up to 4000 m height

5. WARRANTY

For your satisfaction – 1 Year Functional Warranty

The warranty is valid during one year after purchase and as long as the unit's enclosure remains undamaged. CPR4 is a sensitive instrument. If attempts are made to open CPR4 the equipment will be damaged and the guarantee is no longer valid. CPR4 contains no repairable parts.

If any faults or errors are encountered, please contact the distributor or Cinside directly to get a RMA-code before returning any goods. Faulty equipment is exchanged free of charge during the warrantee period, the sender pay the freight costs.

Did you know that...

..CPR4 comes in different colours?

www.cinside.eu